10/525406

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
4 March 2004 (04.03.2004)

PCT

(10) International Publication Number
WO 2004/019390 A2

(51) International Patent Classification[7]: H01L 21/20, 33/00

(21) International Application Number: PCT/JP2003/010421

(22) International Filing Date: 18 August 2003 (18.08.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0219728.3 23 August 2002 (23.08.2002) GB

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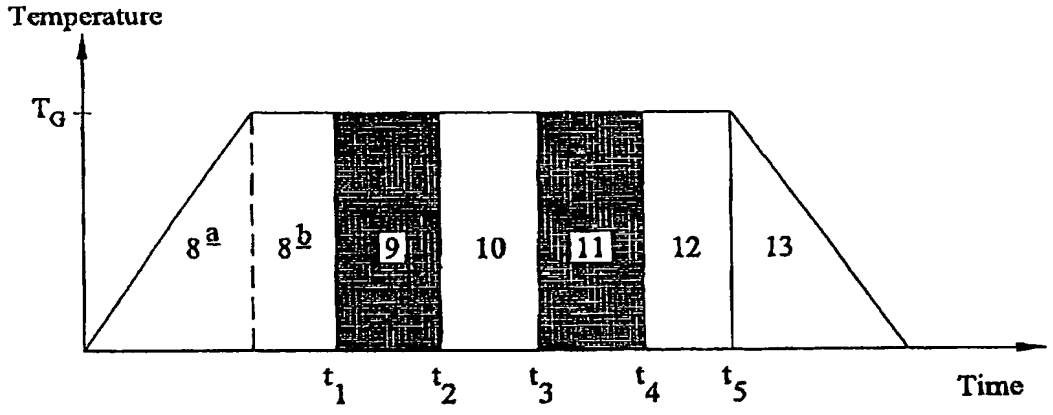
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *without international search report and to be republished upon receipt of that report*

[Continued on next page]

(54) Title: MBE GROWTH OF AN ALGAN LAYER OR ALGAN MULTILAYER STRUCTURE



(57) Abstract: A method of growing an AlGaN semiconductor layer structure by Molecular Beam Epitaxy comprises supplying ammonia, gallium and aluminium to a growth chamber thereby to grow a first (Al,Ga)N layer by MBE over a substrate disposed in the growth chamber. The first (Al,Ga)N layer has a non-zero aluminium mole fraction. Ammonia is supplied at a beam equivalent pressure of at least 1 10^{-4} mbar, gallium is supplied at a beam equivalent pressure of at least 1 10^{-8} mbar and aluminium is supplied at a beam equivalent pressure of at least 1 10^{-8} mbar during the growth step. Once the first (Al,Ga)N layer has been grown, varying the supply rate of gallium and/or aluminium enables a second (Al,Ga)N layer, having a different aluminium mole fraction from the first (Al,Ga)N layer to be grown by MBE over the first (Al,Ga)N layer. This process may be repeated to grown an (Al,Ga)N multilayer structure.

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